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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,425	10/30/2001	Kazuhisa Sakamoto	107400-00043	2475

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EXAMINER

HU, SHOUXIANG

ART UNIT PAPER NUMBER

2811

DATE MAILED: 08/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,425

Applicant(s)

SAKAMOTO, KAZUHISA

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 9, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 9, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species 4 (the embodiment of Figs. 12-16) in Paper No. 8 is acknowledged. And, Applicant identified claims 1-4, 9 and 11 as readable on the elected species.
2. However, claims 2 and 4 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being unreadable on the elected species. Claims 2 and 4 each recite the subject matter that the base contact section is constructed of a repeating structure in which two regions of a same conductivity type are arranged in an alternate manner, which is readable only on the non-elected species of Fig. 11.
3. In addition, claims 5 and 12 are found to be readable on the elected species.
4. Accordingly, claims 1-5, 9, 11 and 12 are pending in this application; and claims 1, 3, 5, 9, 11 and 12 remain active in this Office action.

Information Disclosure Statement

5. The information disclosure statement filed on 6/6/03 (Paper No. 7) fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

6. Figures 17-20 are objected to as they should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

7. Claims 1, 3, 5, 9, 11 and 12 are objected to because of numerous informalities and/or defects, including but not limited to the following ones:

In claims 9 and 11, the terms of "a base contact section provided oppositely from" should read as: --a base contact section spaced apart from--.

In claims 9 and 11, the terms of "so that said base region" should read as: --so that a portion of said base region--.

In claim 9, the term of "segmented into a plurality " should read as: --segmented into a plurality of stripe regions--.

In claim 9, the term of "and insulating film" should read as: --to cover the exposed portions of said base region via an insulating film--.

In claims 5 and 12, the terms of "an emitter electrode" and "a base electrode" should read as: --said emitter electrode -- and --said base electrode--, respectively.

In claims 5 and 12, the terms of "being alternately arranged" should read as: --in an alternate manner--.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 3, 5, 9, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 11 each recite the limitation of "to be segmented into", but each fail to clarify the subject matters that whether it is the single stripe region or the stripe regions that is/are segmented; and that how it/they is/are segmented. And the limitation of "connected to said strip regions" recited in each of the claims fails to clarify whether it refers to the segmented stripe regions or to the un-segmented stripe regions.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 5, 9, 11 and 12, insofar as being in compliance with 35 U.S.C 112, and as being best understood in view of the above claim objections, are rejected under 35 U.S.C. 102(b) as being anticipated by Palara (US 5,408,124).

Palara discloses a semiconductor device with a bipolar transistor (particularly see Fig. 7, in view of Fig. 4, and col. 7, lines 12-48), comprising: a collector region (20 and

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21; N type); a base region (22; P type); an emitter region (24; N type); a base contact region (the region of the base layer 22 that is directly under the base electrode 23) spaced apart from the emitter region (24) and electrically connected to the base electrode (23), wherein the emitter region comprises a plurality of paired stripe regions (24); a portion of the base region is exposed at the central portion of each pair of the stripe regions; and an emitter electrode (27) is connected to each of the paired stripe regions and covers the exposed portions of the base region via an insulating film.

Regarding claims 5 and 12, the base electrode (23) and the emitter electrode (27) are naturally in comb structures with their teeth being alternately arranged, since both of them are stripe-shaped.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1 and 3, insofar as being in compliance with 35 U.S.C 112, and as being best understood in view of the above claim objections, are rejected under 35 U.S.C. 103(a) as being unpatentable over Palara (US 5,408,124) in view of Kim et al. ("Kim"; US 5,432,360).

The disclosure of Palara is discussed as applied to claims 5, 9, 11 and 12 above.

Although Palara does not expressly disclose that the base contact region can be constructed of a repeating structure of alternatively arranged P+ and N+ regions, one of ordinary skill in the art would readily recognize that such repeating structure can be desirably formed in a contact region in order to reduce the minority carrier accumulation in the contact region, so as to reduce the recovery time, as evidenced in Kim (see the repeating structure in Fig. 1C, and col. 1, line 18, through col. 2, line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the repeating structure of Kim into the base contact section of Palara, so that a semiconductor device with reduced recovery time would be obtained.

Conclusion

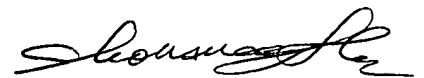
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is (703) 306-5729. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SH
August 5, 2003



Shouxiang Hu
TC2800

**SHOUXIANG HU
PRIMARY EXAMINER**